

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

FEDERALLY ENFORCEABLE CONDITIONAL MAJOR (FINAL PERMIT) No. F-05-051 R1

LUBRIZOL ADVANCED MATERIALS, INC.

CALVERT CITY, KY 42029

SEPTEMBER 10, 2008

PHILIP T. JARBOE, P.E., REVIEWER

SOURCE ID:	21-157-00060
AGENCY INTEREST #:	46166
ACTIVITY ID:	APE20080001

SOURCE DESCRIPTION:

An application for a Conditional Major operating permit, F-05-051, for the Lubrizol Advanced Materials, Inc. Carbopol[®] facility, a specialty chemical manufacturing plant, located in Calvert City, Kentucky, was received on December 19, 2003. Lubrizol Advanced Materials, Inc. submitted supplemental information to the permit application on June 6, 2004. To account for new insignificant activities at the plant and to provide greater clarity in response to DAQ queries on the December 2003 application, a revised application was submitted on March 14, 2006. Lubrizol Advanced Materials, Inc. also submitted supplemental information to the permit application on September 7, 2006.

The facility is located at the site of the former B.F. Goodrich Company complex and consists of the equipment comprising the portion of that complex formerly known as the B.F. Goodrich Carbopol[®] facility. A Title V Operating Permit application was submitted by the B.F. Goodrich Company on December 11, 1998 for the entire complex, which included the Telene and Carbopol[®] facilities. Subsequent to the submittal of that application, the assets of the complex were sold. The Carbopol[®] facility was sold in February 2001, and is now wholly owned by, Lubrizol Advanced Materials, Inc. and is the subject of this permit. The Telene facility (now known as the Dicyclopentadiene facility) is under separate ownership and is unrelated to this permit.

The Standard Industrial Classification (SIC) Code for this source is 2821, *Plastic Materials, Synthetic Resins, and Nonvulcanizable Elastomer* manufacturing.

Lubrizol Advanced Materials, Inc. has accepted permit conditions to limit the facility's potential to emit (PTE) below major source thresholds, and the source is classified as a "nonmajor source" pursuant to 401 KAR 52 and 40 CFR 70. Therefore, the source is subject to the provision of 401 KAR 52:030. This permit is the initial Conditional Major operating permit for this source.

F-05-051 R1:

The following administrative revisions have been incorporated into the permit.

Revision of the NESHAP operating plan, submitted November 20, 2006.

The facility submitted a revised operating plan for Benzene Storage Vessels Closed Vent system. There were no changes to the permit.

Application submitted June 4, 2007.

1. Changed name of facility from Noveon, Inc. to Lubrizol Advanced Materials, Inc.
2. Deleted insignificant activities numbers:

22.	Initiator change tank (TK-6C) capacity 100 gal	401 KAR 63:020
25.	Dryer #6 packaging filter (BL-102) capacity: N/A	401 KAR 59:010
26.	Dryer #7 packaging filter (BL-101) capacity: N/A	401 KAR 59:010
27.	Dryer #8 filter (BL-1PA) capacity: N/A	401 KAR 59:010
28.	Dryer #9 packaging filter (BL-2PA) capacity: N/A	401 KAR 59:010
29.	Dryers #8, 10 packaging filter (BL-3PA) capacity: N/A	401 KAR 59:010
30.	Dryers #9, 10 filter (BL-4PA) capacity: N/A	401 KAR 59:010
39.	Vacuum Jets (VJ-39H/40H) capacity: N/A	401 KAR 59:010

Added insignificant activities numbers:

75.	Filter (BL-26H) for dryers #6-10 & packaging lines Capacity: N/A	401 KAR 59:010
76.	PTZ shot storage tank (TK-6C) Capacity: 37 gal	401 KAR 63:020
77.	Vacuum Blower (CM-5H)	401 KAR 59:010

Application submitted August 8, 2008.

Added insignificant activities number:

78. Tank cleanout into drums

PROCESS DESCRIPTION:

Carbopol[®], a synthetic thickener, is produced at the facility in a carrier, which may be benzene, ethyl acetate or cosolvent (a mixture of ethyl acetate and cyclohexane). Raw materials are charged to batch polymerizers which empty into blowdown tanks upon completion of the polymerization process. The material is then dried and packaged. The product is manufactured in a polymerizer that must be washed routinely. The resulting wastewater stream is processed through the Carbopol[®] wastewater treatment plant.

All bulk storage tanks are within a diked area at the Carbopol[®] tank farm to collect any spills that may occur. Rain water from these dikes and wastewater from process drains are collected in a sump and processed through the Carbopol[®] wastewater treatment plant.

The Carbopol[®] wastewater treatment plant is designed to remove benzene from wastewater by batch distillation. Condensate is collected in a decanter where benzene is decanted off and the water phase is recycled back through the plant. Water from other process decanters containing benzene is transferred to a stripper.

Carriers which are used to produce Carbopol[®] are recovered and recycled back through the process. A carbon bed adsorption system is used for benzene recovery, whereas the other carriers are recovered using refrigerated condensers. The carbon bed also serves to control emissions from equipment in benzene service. A thermal oxidizer is used to control emissions from equipment in ethyl acetate and cosolvent service, along with most storage tanks and the wastewater treatment

plant. The thermal oxidizer is a control device that is secondary to the regenerative carbon beds for processes that use benzene as a carrier. Since the equipment in benzene service must always be controlled by the regenerative carbon beds, conditions have been added to the permit allowing the facility to have the thermal oxidizer off-line for a maximum of 1,927 hours per year. This will allow the benzene process to continue to operate when the thermal oxidizer is off-line.

COMMENTS:

(1) Emission Units: The following is a list of significant emission units at the facility:

(a) **C01- Carbopol[®] Production Unit**

01 Description: Nineteen (19) Polymerizer Charge Pots

Maximum Operating Limitation:

7,000 tons Carbopol[®] polymer per year using benzene carrier

6,000 tons Carbopol[®] polymer per year using ethyl acetate carrier

11,278 tons Carbopol[®] polymer per year using ethyl acetate-cyclohexane carrier

Source Equipment ID: FL-6N2, FL-4N2, FL-3N1, FL-3H, FL-1H, FL-7N2, FL-5N2, FL-2N2, FL-1N, FL-2H, FL-1G, TK-1/PLY-1N4, TK-1/PLY-2N4, TK-1/PLY-21E, TK-1/PLY-22E, TK-1/PLY-23E, TK-1/PLY-24E, TK-1/PLY-25E, TK-1/PLY-26E

Construction Date: 1957-1991

Control Equipment: None

02 Description: Nineteen (19) Polymerizers

Maximum Operating Limitation:

7,000 tons Carbopol[®] polymer per year using benzene carrier

6,000 tons Carbopol[®] polymer per year using ethyl acetate carrier

11,278 tons Carbopol[®] polymer per year using ethyl acetate-cyclohexane carrier

Source Equipment ID: PLY-1N4, PLY-2N4, PLY-21E, PLY-22E, PLY-23E, PLY-24E, PLY-25E, PLY-26E, RE-7N2, RE-6N2, RE-4N2, RE-3H, RE-1H, RE-3N1, RE-5N2, RE-1N, RE-2N, RE-2H, RE-1G

Construction Date: 1957-1991

Control Equipment: When in benzene service: Regenerative Carbon System (Carbon Adsorber Stack (AC1) vents to the Thermal Oxidizer (TO) except when the TO is not operational – not to exceed 1,927 hours during any consecutive 12-month period). When in ethyl acetate or cosolvent service: Thermal Oxidizer.

03 Description: Ten (10) Blow-Down Tanks

Maximum Operating Limitation:

7,000 tons Carbopol[®] polymer per year using benzene carrier

6,000 tons Carbopol[®] polymer per year using ethyl acetate carrier

11,278 tons Carbopol[®] polymer per year using ethyl acetate-cyclohexane carrier

Source Equipment ID: TK-10N2, TK-5N1, TK-107N, TK-4H, TK-11N2, TK-3N, TK-103P, TK-5H1, TK-23G, TK-25G

Construction Date: 1957-1991

Control Equipment: When in benzene service: Regenerative Carbon System (Carbon Adsorber Stack (AC1) vents to the Thermal Oxidizer (TO) except when the

TO is not operational – not to exceed 1,927 hours during any consecutive 12-month period). When in ethyl acetate or cosolvent service: Thermal Oxidizer.

- 04 Description:** One (1) Blow-Down Tank
Annual Design Rate: 10 batches per year
Capacity: 2,500 gallons
Source Equipment ID: TK-3N- alternate use
Construction Date: 1957-1991
Control Equipment: None
- 05 Description:** Four (4) Blow-Down Tanks
Maximum Operating Limitation:
7,000 tons Carbopol[®] polymer per year using benzene carrier
6,000 tons Carbopol[®] polymer per year using ethyl acetate carrier
11,278 tons Carbopol[®] polymer per year using ethyl acetate-cyclohexane carrier
Source Equipment ID: TK-1N5, TK-21G, TK-22G, TK-24G
Construction Date: 1957-1991
Control Equipment: When in benzene service: Regenerative Carbon System (Carbon Adsorber Stack (AC1) vents to the Thermal Oxidizer (TO) except when the TO is not operational – not to exceed 1,927 hours during any consecutive 12-month period). When in ethyl acetate or cosolvent service: Thermal Oxidizer.
- 06 Description:** Eighteen (18) Rotary Dryers
Maximum Operating Limitation:
7,000 tons Carbopol[®] polymer per year using benzene carrier
6,000 tons Carbopol[®] polymer per year using ethyl acetate carrier
11,278 tons Carbopol[®] polymer per year using ethyl acetate-cyclohexane carrier
Source Equipment ID: DR-2P1, DR-1P1, DR-3H1, DR-2H, DR-1H, DR-101P, DR-100P, DR-1PA, DR-2PA, DR-3PA, DR-21H, DR-22H, DR-23H, DR-24H, DR-25H, DR-26H, DR-27H, DR-28H
Construction Date: 1957-1991
Control Equipment: When in benzene service: Regenerative Carbon System (Carbon Adsorber Stack (AC1) vents to the Thermal Oxidizer (TO) except when the TO is not operational – not to exceed 1,927 hours during any consecutive 12-month period). When in ethyl acetate or cosolvent service: Thermal Oxidizer.
- 07 Description:** Four (4) Rotary Dryers
Maximum Operating Limitation:
7,000 tons Carbopol[®] polymer per year using benzene carrier
6,000 tons Carbopol[®] polymer per year using ethyl acetate carrier
11,278 tons Carbopol[®] polymer per year using ethyl acetate-cyclohexane carrier
Source Equipment ID: DR-29H, DR-30H, DR-31H, DR-32H
Construction Date: 1991
Control Equipment: When in benzene service: Regenerative Carbon System (Carbon Adsorber Stack (AC1) vents to the Thermal Oxidizer (TO) except when the TO is not operational – not to exceed 1,927 hours during any consecutive 12-month period). When in ethyl acetate or cosolvent service: Thermal Oxidizer.

- 08 Description:** One (1) Spray Dryer
Maximum Operating Limitation:
7,000 tons Carbopol[®] polymer per year using benzene carrier
Source Equipment ID: DR-1P3
Construction Date: 1975
Control Equipment: Regenerative Carbon System (Carbon Adsorber Stack (AC1) vents to the Thermal Oxidizer (TO) except when the TO is not operational – not to exceed 1,927 hours during any consecutive 12-month period). Spray dryer emergency vents to a carbon drum/canister (AC2).
- 09 Description:** Two (2) Polymerizers
Annual Design Rate:
4,678 tons Carbopol[®] polymer per year using ethyl acetate carrier
4,678 tons Carbopol[®] polymer per year using ethyl acetate-cyclohexane carrier
Source Equipment ID: PLY-27E, PLY-28E
Construction Date: 2004
Control Equipment: Thermal Oxidizer (TO) except may be periodically vented through its process condenser to the atmosphere if the thermal oxidizer is not operational (not to exceed 1,927 hours during any consecutive 12-month period).
- 10 Description:** Two (2) Horizontal Dryers
Annual Design Rate:
4,678 tons Carbopol[®] polymer per year using ethyl acetate carrier
4,678 tons Carbopol[®] polymer per year using ethyl acetate-cyclohexane carrier
Source Equipment ID: DR-33H, DR-34H
Construction Date: 2004
Control Equipment: Thermal Oxidizer (TO) except may be periodically vented through its process condenser to the atmosphere if the thermal oxidizer is not operational (not to exceed 1,927 hours during any consecutive 12-month period).
- (b) **C02- Benzene Storage Tanks and Recovery System (Support for C01 Process)**
- 01 Description:** One (1) Fresh Benzene Storage Tank
Annual Design Rate: 115,174 gallons per year
Source Equipment ID: TK-21B
Construction Date: pre-1984
Control Equipment: Regenerative Carbon System (Carbon Adsorber Stack (ACI) vents to the Thermal Oxidizer (TO) except when the TO is not operational- not to exceed 1,927 hours during any consecutive 12-month period).
- 02 Description:** One (1) Recycle Benzene Storage Tank
Annual Design Rate: 15,531,085 gallons per year
Source Equipment ID: TK-22B
Construction Date: pre-1984
Control Equipment: Regenerative Carbon System (Carbon Adsorber Stack (ACI) vents to the Thermal Oxidizer (TO) except when the TO is not operational- not to exceed 1,927 hours during any consecutive 12-month period).

- 03 Description:** One (1) Wet Benzene Storage Tank
Annual Design Rate: 2,628,000 gallons per year
Source Equipment ID: TK-23B
Construction Date: pre-1984
Control Equipment: Regenerative Carbon System (Carbon Adsorber Stack (ACI) vents to the Thermal Oxidizer (TO) except when the TO is not operational- not to exceed 1,927 hours during any consecutive 12-month period).
- 04 Description:** Benzene Dewatering System (column, condenser, decanter, bottoms pump, bottoms cooler.)
Maximum Operating Limitation:
7,000 tons Carbopol[®] polymer per year using benzene carrier
Source Equipment ID: DE-1D
Construction Date: On and after 1957
Control Equipment: Regenerative Carbon System (Carbon Adsorber Stack (ACI) vents to the Thermal Oxidizer (TO) except when the TO is not operational- not to exceed 1,927 hours during any consecutive 12-month period).
- 05 to 11 Description:** Benzene Recovery System
Maximum Operating Limitation:
7,000 tons Carbopol[®] polymer per year using benzene carrier
Source Equipment ID: TK-21F (emission unit (EU) 06), TK-21H (EU05), TK-23F (EU08), TK-35F (EU10), DE-21F (EU11), DE-22F (EU07), V-100 (EU09)
Construction Date: On and after 1957
Control Equipment: Regenerative Carbon System (Carbon Adsorber Stack (ACI) vents to the Thermal Oxidizer (TO) except when the TO is not operational- not to exceed 1,927 hours during any consecutive 12-month period).
- (c) **C05- Fugitive Emissions (Carbopol[®] Process)**
- 01 Description:** Fugitive Emissions (Benzene Service: total components 13,848; Ethyl Acetate Service: total components 10,808; Cosolvent Service: total components 10,205) (pumps, relief devices, valves, and connectors) associated with the Carbopol[®] Process Area (C01).
Annual Rate: 8,760 hours per year
Source Equipment ID: F1
Construction Date: On and after 1957
Control Equipment: None
- (d) **C06- Benzene Waste Operations (Support for C01 Process)**
- 01 Description:** One (1) Wastewater System Tank (Batch Still Feed)
Annual Design Rate: 10,220,000 gallons per year
Source Equipment ID: V-200
Construction Date: On and after 1957
Control Equipment: Thermal Oxidizer (TO), except may be periodically vented to an activated carbon drum (AC5) if the TO is not operational (not to exceed 1,927 hours during any consecutive 12-month period).

- 02** **Description:** One (1) Batch Still (C-220) and One (1) Decanter (V-220)
Annual Design Rate: 10,220,000 gallons per year
Source Equipment ID: C-220, V-220
Construction Date: On and after 1957
Control Equipment: Thermal Oxidizer (TO), except may be periodically vented to an activated carbon drum (AC5) if the TO is not operational (not to exceed 1,927 hours during any consecutive 12-month period).
- 03** **Description:** One (1) Process Stripper
Annual Design Rate: 43,800,000 pounds per year
Source Equipment ID: CL-1F
Construction Date: On and after 1957
Control Equipment: Regenerative Carbon System (Carbon Adsorber Stack (AC1)) vents to the Thermal Oxidizer (TO) except when the TO is not operational (not to exceed 1,927 hours during any consecutive 12-month period).
- 04** **Description:** One (1) Wastewater Storage Tank
Annual Design Rate: 15,599,560 gallons per year
Source Equipment ID: TK-1858
Construction Date: On and after 1957
Control Equipment: Thermal Oxidizer (TO), except may be periodically vented to an activated carbon drum (AC5) if the TO is not operational (not to exceed 1,927 hours during any consecutive 12-month period).
- 05** **Description:** One (1) Stripper Feed Tank
Annual Design Rate: 5,248,652 gallons per year
Source Equipment ID: TK-1F
Construction Date: On and after 1957
Control Equipment: Regenerative Carbon System (Carbon Adsorber Stack (AC1)) vents to the Thermal Oxidizer (TO) except when the TO is not operational (not to exceed 1,927 hours during any consecutive 12-month period).
- 06** **Description:** Wastewater Sumps and Lift Stations
Annual Design Rate: 14,669,500 gallons per year (combined)
Source Equipment ID: SUMPS
Construction Date: On and after 1957
Control Equipment: None
- (e) **C07- Fugitive Emissions**
- 01** **Description:** Fugitive Emissions, total component count: 584 (pumps, relief devices, valves and connectors) associated with the acrylic acid storage tanks and the polymer charge lines.
Annual Rate: 8,760 hours per year

Source Equipment ID: F3
Construction Date: On and after 1957
Control Equipment: None

- 02 Description:** Fugitive Emissions, total component count: 1,339 (pumps, relief devices, valves and connectors) associated with the Horizontal Reactor/Horizontal Dryer (HRHD) system.
Annual Rate: 8,760 hours per year
Source Equipment ID: F9
Construction Date: 2005
Control Equipment: None

(f) **C08- Cooling Tower and Control Equipment**

- 01 Description:** Cooling Tower
Annual Rate: 8,760 hours per year
Maximum Hourly Rate: 540 Kgal per hour cooling water recirculation rate
Source Equipment ID: CT
Construction Date: 1991
Control Equipment: None

- 02 Description:** Thermal Oxidizer
Maximum Operating Limitation: 22.93 mmscf per year
Equipment ID: TO
Construction Date: 1989
Control Equipment: None

- 03 Description:** Regenerative Carbon System
Maximum Hourly Rate: 0.0131 mmscf per hour
Equipment ID: AC1
Construction Date: 1975
Control Equipment: None

- (2) Refer to Section C of the permit for a list of the facility's insignificant activities and generally applicable regulations.
- (3) Emission Factors: The source's potential emissions of air pollutants are based on emission calculations provided in the permit application. This source is taking limits to remain minor for HAPs and therefore is not subject to the requirements of 40 CFR 63 Subpart FFFF (*National Emission Standard for Hazardous Air Pollutants from Miscellaneous Organic Chemicals Production and Processes*); however emissions were calculated using the procedures and equations referenced in 40 CFR 63 Subpart FFFF. Equations in Section 7 of AP-42 were used for tank working and breathing losses. For tanks that are small in diameter, vapor displacement equations referenced in 40 CFR 63, Subpart FFFF (Subpart FFFF references 40 CFR 63 Subpart GGG, *National Emission Standard for Hazardous Air Pollutants from the Pharmaceutical Production*) were used. Additionally, U.S. EPA's WATER9 and *Protocol for Equipment Leak Estimates* for fugitive component emission calculations were used. A fugitive emission bagging study was conducted and approved by

DAQ in December 1995 to develop specific correlation formulae applied to the in-service components. The permittee shall continue to conduct monthly leak detection monitoring for the determination of related component screening values (SV) to be used in these approved formulae. Emission calculations for the production units were based on emission factors that were derived from emission factors in chemical engineering references, including Perry's *Chemical Engineers' Handbook* and AIChE's *Chemical Engineering Progress*.

(4) Applicable Regulations:

(a) 401 KAR 57:002, *Hazardous Pollutants*, which incorporates by reference 40 CFR 61, Subpart V, *National Emission Standards for Hazardous Air Pollutants for Equipment Leaks (Fugitive Emission Sources)*. 40 CFR 61, Subpart V applies to pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by 40 CFR 61, Subpart V that are intended to operate in volatile hazardous air pollutant (VHAP) service. This regulation applies to the following emission units that are in benzene service:

- i. EP C02(--) Benzene Storage Tanks and Recovery System (Support for C01 Process), Equipment ID: Benzene Recovery System (i.e., TK-21F, TK-21H, TK-23F, TK-35F, DE-21F, DE-22F, V-100), and Benzene Dewatering System (i.e., DE-1D)
- ii. EP C05(--) Fugitive Emissions (Carbopol[®] Process), Equipment ID: F1

The requirements of 40 CFR 61 Subpart A (Section 61.12(c)), *General Provisions*, are also applicable to these emission units.

The emission units above are each equipped with a control device and a closed vent system. Pursuant to 40 CFR 61.242-11(a), emission units that are subject to 40 CFR 61, Subpart V and use a closed-vent system and control device to comply with the provisions of 40 CFR 61, Subpart V shall comply with the provisions of 40 CFR 61.242-11.

(b) 401 KAR 57:002, *Hazardous Pollutants*, which incorporates by reference 40 CFR 61, Subpart J, *National Emission Standards for Hazardous Air Pollutants for Equipment Leaks (Fugitive Emission Sources) of Benzene*. 40 CFR 61, Subpart J applies to pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this regulation that are intended to operate in benzene service. While the provisions of 40 CFR 61, Subpart J are effective, a source to which 40 CFR 61, Subpart J applies that is also subject to the provisions of 40 CFR Part 60 will only be required to comply with the provisions of this subpart. This regulation applies to the following emission units:

- i. EP C2(--) Benzene Storage Tanks and Recovery System (Support for C01 Process), Equipment ID: Benzene Recovery System (i.e., TK-21F, TK-21H, TK-23F, TK-35F, DE-21F, DE-22F, V-100), and Benzene Dewatering System (i.e., DE-1D)

ii. EP C5(--). Fugitive Emissions (Carbopol[®] Process), Equipment ID: F1

The requirements of 40 CFR 61, Subpart A (Section 61.12(c)), *General Provisions*, are also applicable to these emission units.

- (c) 401 KAR 57:002, *Hazardous Pollutants*, which incorporates by reference 40 CFR 61, Subpart Y, *National Emission Standards for Hazardous Air Pollutants for Benzene Emissions from Benzene Storage Vessels*. 40 CFR 61, Subpart Y applies to each storage vessel that is storing benzene having a specific gravity within the range of specific gravities specified in ASTM D836–84 for Industrial Grade Benzene, ASTM D835–85 for Refined Benzene-485, ASTM D2359–85a or 93 for Refined Benzene-535, and ASTM D4734–87 or 96 for Refined Benzene-545. These specifications are incorporated by reference as specified in 40 CFR 61.18. Storage vessels with a design storage capacity less than 38 cubic meters (10,000 gallons) are required to comply only with the recordkeeping requirement of 40 CFR 61.276(b). This regulation applies to the following emission units:

C02(--). Benzene Storage Tanks and Recovery System (Support for C01 Process), Equipment IDs: TK-21B, TK-22B and TK-23B

The requirements of 40 CFR 61, Subpart A (Section 61.12(c)), *General Provisions*, are also applicable to these emission units.

- (d) 401 KAR 57:002, *Hazardous Pollutants*, which incorporates by reference 40 CFR 61, Subpart FF, *National Emission Standards for Hazardous Air Pollutants for Benzene Waste Operations*. 40 CFR 61, Subpart FF applies to owners and operators of chemical manufacturing plants. This regulation applies to the following emission units:

C06(--). Benzene Waste Operations (Support for C01 Process), Equipment IDs: V-200, C-220, V-220, TK-1858, TK-1F, CL-1F, and SUMPS

The requirements of 40 CFR 61, Subpart A (Section 61.12(c)), *General Provisions*, are also applicable to these emission units.

- (e) 401 KAR 63:010, *Fugitive Emissions*, applies to any apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality. This regulation applies to the following emission unit:

C08(--). Cooling Tower

- (f) 401 KAR 63:021, *Existing Sources Emitting Toxic Air Pollutants*, applies to sources which were issued a permit pursuant to 401 KAR 50:035 with conditions based on this administrative regulation or 401 KAR 63:022. The permittee must continue to comply with such related conditions unless it can be demonstrated that a condition is no longer necessary to protect human health and the environment.

Permit No. S-96-128 (Revision 2) was issued on November 11, 1996 to the previous owner of the Carbopol[®] plant, B.F. Goodrich. General Condition No. 25 of Permit S-

96-128 limited the source's hourly emission rate of acrylic acid to 1.10 lb/hour. Since the permittee has accepted voluntary limits in this conditional major permit, and since the source is using regenerative carbon adsorption and thermal oxidizer for organic emissions control, the following results were calculated:

Pollutant	401 KAR 63:021 Allowable from S-96-128 (lb/hr)	Annual Emissions Based on S-96-128 (tpy)	Maximum Uncontrolled PTE (POC Table, tpy)	Maximum Controlled PTE (POC Table, tpy)
Acrylic Acid	1.10	4.82	5.2	3.7

Since the permittee is required to operate organic compound control equipment in accordance with the enforceable conditions of the conditional major permit, the maximum controlled PTE is reflective of compliance with the prior B.F. Goodrich's State Origin permit limit of 1.10 lb/hour and such is not included in this permit.

- (g) 401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*, applies to each affected facility which emits or may emit potentially hazardous or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. This source is subject to the requirements of 401 KAR 57:002 (40 CFR 61, Subparts J, Y, V, FF), as discussed above. The permittee shall use a regenerative carbon adsorption system and thermal oxidizer, as specified in the permit, to comply with these rules and 401 KAR 52:030. This notwithstanding, the Division has decided that it would be beneficial, although not required at this time, for the permittee to perform an air dispersion modeling evaluation for cyclo-hexane and ethyl acetate to ensure that emissions of these compounds comply with 401 KAR 63:020. These two compounds are not directly affected by Part 61, and they are the primary after control VOC emissions from the respective *in-ethyl acetate* and *in-cosolvent service* operating scenarios. Additionally, due to the carcinogenic characteristics of benzene, the Division has also decided that the permittee should include benzene in the evaluation to ensure compliance with 401 KAR 63:020, although modeling is not required at this time.

(5) Non-Applicable Regulations:

- (a) Lubrizol Advanced Materials, Inc. has requested voluntary limits to preclude the applicability of 401 KAR 51:017, *Prevention of Significant Deterioration of Air Quality*, and 401 KAR 52:020, *Title V Permits*. Related federally enforceable conditions are included in the permit.
- (b) 401 KAR 60:005, which incorporates by reference 40 CFR 60, Subpart Kb (40 CFR 60 112b), *Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984*. This regulation is not applicable to any of the volatile organic liquid storage vessels at the source because the capacity of each storage vessel is less than 75 m³.

- (c) 401 KAR 60:005, which incorporates by reference 40 CFR 60, Subpart VV, *Standards of Performance for Equipment Leaks of VOC in Synthetic Organic Chemicals Manufacturing Industry*, does not apply because the facility does not produce as a product, intermediate, or byproduct, any of the chemicals listed in 40 CFR 60.489.
- (d) 401 KAR 60:005, which incorporates by reference 40 CFR 60, Subpart DDD, *Standards of Performance for Volatile Organic Compound (VOC) Emission from the Polymer Manufacturing Industry*. 40 CFR 60, Subpart DDD does not apply because the source does not manufacture polypropylene, polyethylene, polystyrene or poly (ethylene terephthalate), as defined at 40 CFR 60.561.
- (e) 401 KAR 60:005, which incorporates by reference 40 CFR 60, Subpart NNN, *Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operation*. The distillate columns for the Benzene Storage Tank and Recovery System (EP C02, Benzene Dewatering System (DE-1D)) are not subject to the requirements of this regulation because the facility does not produce as a product, intermediate, or byproduct, any of the chemicals listed in 40 CFR 60.667. Also, the distillate columns are designed as batch distillation and are not a continuous process.
- (f) 401 KAR 63:002, which incorporates by reference 40 CFR 63 Subpart Q, *National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers*. The provisions of this subpart do not apply to the cooling towers, as an insignificant activity, since this unit does not use chromium-based water treatment chemicals, nor is this a major source of HAP emissions, as defined at 40 CFR 63.2.
- (g) 401 KAR 63:002, which incorporates by reference 40 CFR 63, Subpart FFFF, *National Emission Standards for Hazardous Air Pollutants for Miscellaneous Organic Chemical Production*. This regulation does not apply because the source is not a major source of HAP emissions, as defined at 40 CFR 63.2.
- (h) 40 CFR 64, *Compliance Assurance Monitoring*. This rule does not apply to any emission unit because this source is approved to operate under a Conditional Major permit and, pursuant to 40 CFR 64.2(a), the requirements of this rule are applicable only to a source required to obtain a Title V (Part 70 or 71) permit.

MINOR PERMIT REVISION TO EXPAND CARBOPOL[®] AND ADDITIVE PRODUCTION:

The changes indicated below have been made at the source during the prior five (5) year period and were incorporated into conditional major permit F-05-051.

- (a) Addition of emission units to expand existing Carbopol[®] production, including two (2) polymerizers, PLY-27E, PLY-28E, each with a capacity of 5,000 gallons, and two (2) horizontal dryers, DR-33H, DR-34H, all controlled by the existing thermal oxidizer, except may be periodically vented through its process condenser to the atmosphere if the thermal oxidizer is not operational (not to exceed 1,927 hours

during any consecutive 12-month period). This change will not affect the conditional major emission limitations for this source.

- (b) Addition of emission units to expand capacity to manufacture a specialty additive intermediate use in the Carbopol[®] manufacturing process, including a specialty additive reactor (capacity 650 gal., insignificant activity), a specialty additive wash still (capacity 1,000 gal., insignificant activity), specialty additive product weigh tank (capacity 270 gal., insignificant activity), vacuum pump knockout tank (capacity 50 gal., insignificant activity), specialty additive solids feed hopper (capacity 22 ft³, insignificant activity), and 50% sodium hydroxide storage tank (capacity 4,500 gal., insignificant activity).

Both of these requested changes were contained in the minor permit revision request submitted to DAQ on September 8, 2003 (Log No. 55969) and were completed on March 25, 2005. See Section G.d of the conditional major permit.

EMISSION AND OPERATING CAPS DESCRIPTION:

To preclude the applicability of 401 KAR 51:017, *Prevention of Significant Deterioration of Air Quality*, and 401 KAR 52:020, *Title V Permits*, the following source wide emission limits shall apply:

- i. Volatile organic compound (VOC) emissions: 90 tons per year;
- ii. Combined hazardous air pollutant (HAP) emissions: 22.5 tons per year; and
- iii. Single hazardous air pollutants (HAPs) emissions: 9 tons per year.

In order to make the conditional major/synthetic minor emission limits enforceable as a practical matter, Lubrizol Advanced Materials, Inc. has voluntarily accepted limits of Carbopol[®] production in any twelve (12) consecutive month period as follows:

- i. Carbopol[®] using benzene as the carrier: 14,000,000 lbs per year;
- ii. Carbopol[®] using ethyl acetate as the carrier: 12,000,000 lbs per year; and
- iii. Carbopol[®] using the cosolvent as the carrier: 22,556,000 lbs per year.

PERIODIC MONITORING:

- (a) To demonstrate compliance with the source wide emissions and operating standards the permittee shall monitor and maintain records of monthly and consecutive twelve (12) month production of Carbopol[®] using each specific carrier identified above. The calculation must be completed by the end of the month following the month in question and the consecutive 12-month totals include the totals for the month in question plus the totals for the previous 11 months.
- (b) The source shall conduct leak detection monitoring as prescribed by 40 CFR 61 as reflected in Section B of the permit; and shall conduct initial and once every five year testing of the emission control systems (regenerative carbon adsorption and thermal oxidizer).
- (c) The permittee shall install, calibrate, maintain, and operate the regenerative carbon bed and the computerized distributed control system (DCS), which monitors the benzene concentration and flow rate downstream of the regenerative carbon bed, in accordance with

procedures outlined in the operating plan submitted to the U.S.E.P.A. on December 13, 1989 (and subsequent revisions).

OPERATIONAL FLEXIBILITY:

There were no alternative operating scenarios proposed by the source; however, alternate operating scenarios are included in the permit based on applicable requirements in 40 CFR Part 61.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Section 61.12 into its air quality regulations.

PERMIT SUMMARY:

Rev #	Permit Type	Activity #	Complete Date	Issuance Date	Summary of Actions
---	Initial Issuance	APE20040001	03/14/06	1/26/07	Initial Issuance, Operating, Conditional Major/Synthetic Minor
R1	Administrative Revision	APE20080001 APE20070001 APE20060001	8/28/08	10/2/08	Name change, revised operating plan and insignificant activities.